

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) An information recording apparatus comprising:

a writing device ~~(i) capable of writing~~ configured to i) write, with respect to a disc-shaped information recording medium, in which at least first and second recording layers, making a pair, are laminated, and in which a buffer area, to prevent a recording or reproduction position for the first and second recording layers from being off to an unrecorded area, is disposed in a position adjacent to a recording area in the first and second recording layers, a first portion out of information to be recorded into the first recording layer along a first track path directing from ~~one~~ a first side to ~~the other~~ a second side out of an inner circumferential side and an outer circumferential side of the information recording medium, and ~~(ii) capable of writing~~ ii) write a second portion out of the information to be recorded into the second recording layer, with a recording direction reversed, along a second track path directing from the ~~other~~ second side to the ~~one~~ first side; and

a controlling device ~~for controlling~~ configured to control said writing device ~~(II)~~ i) to write the first portion

into the first recording layer along the first track path, and then write a predetermined amount of first buffer data into the first recording layer along the first track path in one portion of the buffer area of the first recording layer, and also to perform layer jump from the first recording layer to the second recording layer, and then ~~(II)~~ ii) to write a predetermined amount of second buffer data into the second recording layer along the second track path in one portion of the buffer area of the second recording layer, and then write the second portion into the second recording layer along the second track path.

2. (currently amended) The information recording apparatus according to claim 1, wherein said controlling ~~device~~ controls device is further configured to control said writing device to end writing of the predetermined amount of first buffer data into the first recording layer, in a predetermined recording unit including a physical address, in the one portion of the buffer area of the first recording layer.

3. (currently amended) The information recording apparatus according to claim 2, wherein said controlling ~~device~~ controls device is further configured to control said writing device to start writing of the predetermined amount of second buffer data into the second recording layer, from [[a]] the predetermined recording unit including a correspondence address

in the one portion of the buffer area of the second recording layer corresponding to the physical address.

4. (currently amended) The information recording apparatus according to claim 3, wherein said controlling device ~~controls~~ is further configured to control said writing device to search for the correspondence address after the writing of the predetermined amount of first buffer data into the first recording layer, and to write the predetermined amount of second buffer data on the basis of the searched correspondence address.

5. (currently amended) The information recording apparatus according to claim 2, wherein said controlling device ~~controls~~ is further configured to control said writing device to start writing of the predetermined amount of second buffer data into the second recording layer, from [[a]] the predetermined recording unit including a quasi-correspondence address ~~which is supposed to be~~ located on the ~~one~~ first side of a correspondence address in the one portion of the buffer area of the second recording layer corresponding to the physical address.

6. (currently amended) The information recording apparatus according to claim 5, wherein said controlling device ~~controls~~ is further configured to control said writing device to search for the quasi-correspondence address after the writing of

the predetermined amount of first buffer data into the first recording layer, and to write the predetermined amount of second buffer data ~~on the basis of~~ based upon the searched quasi-correspondence address.

7. (currently amended) The information recording apparatus according to claim 2, wherein said controlling ~~device~~ controls device is further configured to control said writing device to start writing of the predetermined amount of second buffer data into the second recording layer, from [[a]] the predetermined recording unit including a firstly recognized address.

8. (currently amended) The information recording apparatus according to claim 7, wherein said controlling ~~device~~ controls device is further configured to control said writing device to write the firstly recognized address into a predetermined area in at least one of the first and second recording layers.

9. (currently amended) The information recording apparatus according to claim 7, wherein said controlling ~~device~~ controls device is further configured to control said writing device to write a last address where recording is ended in the one portion of the buffer area of the first recording layer, into

a predetermined area in at least one of the first and second recording layers.

10. (currently amended) The information recording apparatus according to claim 1, wherein said controlling ~~device~~ controls device is further configured to control said writing device to further write the first buffer data in order to fill up another portion of the first buffer area and to further write the second buffer data in order to fill up another portion of the second buffer area, after writing of the second portion into the second recording layer is completed.

11. (currently amended) The information recording apparatus according to claim 1, wherein said controlling ~~device~~ controls device is further configured to control said writing device to start recording of the first portion from a portion of the first recording layer continued from a lead-in area of the information recording medium, and to write information for forming a lead-out area on the ~~one~~ first side of a recording end position of the second recording layer, after writing of the second portion into the second recording layer is completed.

12. (currently amended) The information recording apparatus according to claim 1, wherein,

said writing device ~~can~~ is configured to optically write the first and second portions by irradiating laser light,

 the second recording layer is located on a rear side of the first recording layer as viewed from an irradiation direction of the laser light, and

 said controlling device ~~controls~~ is configured to control said writing device to perform layer focus jump from the first recording layer to the second recording layer, as the layer jump.

13. (currently amended) An information recording / reproducing apparatus, comprising:

a writing device i) configured to write, with respect to a disc-shaped information recording medium in which at least first and second recording layers forming a pair are laminated and in which a buffer area to prevent a recording or reproduction position for the first and second recording layers from being off to an unrecorded area is disposed in a position adjacent to a recording area in the first and second recording layers, a first portion out of information to be recorded into the first recording layer along a first track path directing from one side to the other side out of an inner circumferential side and an outer circumferential side of the information recording medium,
 and ii) configured to write a second portion out of the information to be recorded into the second recording layer, with

a recording direction reversed, along a second track path
directing from the other side to the one side;

a controlling device configured to control said writing
device i) to write the first portion into the first recording
layer along the first track path, and then to write a
predetermined amount of first buffer data into the first
recording layer along the first track path in one portion of the
buffer area of the first recording layer, and also to perform
layer jump from the first recording layer to the second recording
layer, and then ii) to write a predetermined amount of second
buffer data into the second recording layer along the second
track path in one portion of the buffer area of the second
recording layer, and then to write the second portion into the
second recording layer along the second track path;

~~the information recording apparatus according to claim~~
~~3, and further comprising:~~

a reading device ~~capable of reading~~ configured to read
the first and second portions from the first and second recording
layers; and

a reproducing device ~~for reproducing~~ configured to
reproduce the read first and second portions, wherein,
said controlling device is configured to control said
writing device to end writing of the predetermined amount of
first buffer data into the first recording layer, in a

predetermined recording unit including a physical address, in the one portion of the buffer area of the first recording layer,
said controlling device is configured to control said writing device to start writing of the predetermined amount of second buffer data into the second recording layer, from a predetermined recording unit including a correspondence address in the one portion of the buffer area of the second recording layer corresponding to the physical address, and

said controlling device ~~controlling~~ is configured to control said reading device (I) i) to read the first portion from the first recording layer along the first track path, and then read the predetermined amount of first buffer data in the one portion of the buffer area of the first recording layer, and then (II) ii) to search for any one of addresses out of the correspondence address, the quasi-correspondence address, and the firstly recognized address, while reading the predetermined amount of second buffer data in the one portion of the buffer area of the second recording layer, and then start reading of the second portion along the second track path on the basis of the searched address, and controls said reproducing device to reproduce the read first and second portions.

14. (currently amended) An information recording method in an information recording apparatus, comprising the step of:

using a writing device (i) capable of writing i)
configured to write, with respect to a disc-shaped information
recording medium in which at least first and second recording
layers, making a pair, are laminated, and in which a buffer area
to prevent a recording or reproduction position for the first and
second recording layers from being off to an unrecorded area is
disposed in a position adjacent to a recording area in the first
and second recording layers, a first portion out of information
to be recorded into the first recording layer along a first track
path directing from one side to the other side out of an inner
circumferential side and an outer circumferential side of the
information recording medium, and (ii) capable of writing ii)
configured to write a second portion out of the information to be
recorded into the second recording layer, with a recording
direction reversed, along a second track path directing from the
other side to the one side,

said information recording method comprising wherein
the using step comprises the sub-step of:

a controlling process of controlling said writing
device (i) to write the first portion into the first recording
layer along the first track path, and then write a predetermined
amount of first buffer data into the first recording layer along
the first track path in one portion of the buffer area of the
first recording layer, and also perform layer jump from the first
recording layer to the second recording layer, and then (ii) ii)

to write a predetermined amount of second buffer data into the second recording layer along the second track path in one portion of the buffer area of the second recording layer, and then write the second portion into the second recording layer along the second track path.

15. (currently amended) An information recording / reproducing method in an information recording / reproducing apparatus, comprising the step of:

using an apparatus comprised of,
a writing device i) configured to write, with respect
to a disc-shaped information recording medium, in which at least
first and second recording layers, making a pair, are laminated,
and in which a buffer area to prevent a recording or reproduction
position for the first and second recording layers from being off
to an unrecorded area is disposed in a position adjacent to a
recording area in the first and second recording layers, a first
portion out of information to be recorded into the first
recording layer along a first track path directing from one side
to the other side out of an inner circumferential side and an
outer circumferential side of the information recording medium,
and ii) configured to write a second portion out of the
information to be recorded into the second recording layer, with
a recording direction reversed, along a second track path
directing from the other side to the one side,

a controlling device for controlling said writing device i) to write the first portion into the first recording layer along the first track path, and then write a predetermined amount of first buffer data into the first recording layer along the first track path in one portion of the buffer area of the first recording layer, and also perform layer jump from the first recording layer to the second recording layer, and then ii) to write a predetermined amount of second buffer data into the second recording layer along the second track path in one portion of the buffer area of the second recording layer and then write the second portion into the second recording layer along the second track path,

~~the information recording apparatus according to claim 3, and further comprising:~~ a reading device ~~capable of reading~~ configured to read the first and second portions from the first and second recording layers[[;]], and

a reproducing device for reproducing the read first and second portions,

wherein said controlling device controls said writing device to end writing of the predetermined amount of first buffer data into the first recording layer, in a predetermined recording unit including a physical address, in the one portion of the buffer area of the first recording layer,

wherein said controlling device controls said writing device to start writing of the predetermined amount of second

buffer data into the second recording layer, from a predetermined recording unit including a correspondence address in the one portion of the buffer area of the second recording layer corresponding to the physical address, and

wherein said information recording / reproducing method comprising using step comprises the sub-step of:

a controlling process of controlling said reading device (I) i) to read the first portion from the first recording layer along the first track path, and then read the predetermined amount of first buffer data in the one portion of the buffer area of the first recording layer, and then (II) ii) to search for any one of addresses out of the correspondence address, the quasi-correspondence address, and the firstly recognized address, while reading the predetermined amount of second buffer data in the one portion of the buffer area of the second recording layer, and then start reading of the second portion along the second track path on the basis of the searched address.

16. (currently amended) A computer-readable medium storing a computer program of instructions for recording control and for tangibly embodying a program of instructions executable by a computer provided in the information recording apparatus according to claim 1, the instructions configured to make cause the computer to function as at least one portion of a controlling device and a writing device,

wherein the writing device is i) configured to write, with respect to a disc-shaped information recording medium in which at least first and second recording layers, making a pair, are laminated, and in which a buffer area to prevent a recording or reproduction position for the first and second recording layers from being off to an unrecorded area is disposed in a position adjacent to a recording area in the first and second recording layers, a first portion out of information to be recorded into the first recording layer along a first track path directing from one side to the other side out of an inner circumferential side and an outer circumferential side of the information recording medium, and ii) configured to write a second portion out of the information to be recorded into the second recording layer, with a recording direction reversed, along a second track path directing from the other side to the one side, and

wherein the controlling device is configured to control said writing device i) to write the first portion into the first recording layer along the first track path, and then write a predetermined amount of first buffer data into the first recording layer along the first track path in one portion of the buffer area of the first recording layer, and also perform layer jump from the first recording layer to the second recording layer, and then ii) to write a predetermined amount of second buffer data into the second recording layer along the second

track path in one portion of the buffer area of the second recording layer, and the write the second portion into the second recording layer along the second track path.